

CLAIMS

I Claim:

1. A lumber product for use in building construction, the lumber product
5 comprising fiber-reinforced cellular concrete made from a cementitious material, water, fiber, and an aerating material, made to form an elongated rigid element of lumber-industry-standard dimensions, wherein the cementitious material makes up approximately less than about 83% of the total weight of the lumber product, the water makes up approximately less than about 30% of the total weight of the lumber product, the fiber
10 makes up approximately less than 4% of the total weight of the lumber product, and the aerating material makes up approximately less than 1% of the total weight of the lumber product.
2. The lumber product of claim 1, wherein the cementitious material is
15 selected from the group consisting of: flyash and cement.
3. The lumber product of claim 1, wherein the aerating compound is selected from the group consisting of: aluminum powder and a foaming agent.
- 20 4. The lumber product of claim 1, wherein the fiber is selected from the group consisting of: carbon, polypropylene, alkali-resistant glass, and cellulose.
5. The lumber product of claim 1, wherein the cementitious material
comprises cement, fly ash and silica fume or other pozzolans, and wherein the cement
25 makes up approximately less than about 40% of the total weight of the lumber substitute product, the fly ash makes up approximately less than about 50% of the total weight of the lumber substitute product, and the silica fume or other pozzolans makes up approximately less than about 25% of the total weight of the lumber substitute product.

6. A lumber substitute product for use in building construction, the lumber substitute product comprising fiber-reinforced cellular concrete made from cement which makes up approximately 18-40% of the total weight of the product, fly ash which makes up approximately less than about 50% of the total weight of the product, silica fume or
5 other pozzolans which makes up approximately less than about 25% of the total weight of the product, water which makes up approximately 20-30% of the total weight of the product, fiber which makes up approximately 0.4-3.2% of the total weight of the product, and an aerating material.

10 7. The lumber substitute of claim 6, further comprising sand which makes up approximately less than about 40% of the total weight of the product.

8. The lumber substitute of claim 6, further comprising a water-reducing admixture which makes up approximately less than about 0.6% of the total weight of the
15 product.

9. The lumber substitute product of claim 6, further comprising a color pigment which makes up approximately less than about 3.5% of the total weight of the product.
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10. The lumber substitute product of claim 6, wherein the aerating material is selected from the group consisting of aluminum powder and a foaming agent.

11. The lumber substitute product of claim 6, wherein the aerating material is
25 an aluminum powder which makes up about 0.012-0.048% of the total weight of the product.

12. The lumber substitute product of claim 6, wherein the fiber is selected from the group consisting of carbon, polypropylene, alkali-resistant glass, cellulose, nylon,
30 aramid, acrylic, polyethylene, polyvinyl alcohol and polyolefin.